

**PATENT COOPERATION TREATY**  
**PCT**  
**INTERNATIONAL PRELIMINARY EXAMINATION REPORT**  
(PCT Article 36 and Rule 70)

REC'D 14 JUL 2004  
WPO PCT

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| Applicant's or agent's file reference<br>47321  | <b>FOR FURTHER ACTION</b> See Notification of Transmittal of International Preliminary Examination Report (Form PCT/MPEA/416) |  |
| International application No.<br>PCT/IT 03/00234  | International filing date (day/month/year)<br>15.04.2003  | Priority date (day/month/year)<br>15.04.2003 |
| International Patent Classification (IPC) or both national classification and IPC<br>D02G1/16 |   |  |
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| <p>1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 4 sheets, including this cover sheet.</p> <p><input checked="" type="checkbox"/> This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).</p> <p>These annexes consist of a total of 3 sheets.</p>   |
| <p>3. This report contains indications relating to the following items:</p> <ul style="list-style-type: none"> <li>I <input checked="" type="checkbox"/> Basis of the opinion</li> <li>II <input type="checkbox"/> Priority</li> <li>III <input type="checkbox"/> Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</li> <li>IV <input type="checkbox"/> Lack of unity of invention</li> <li>V <input checked="" type="checkbox"/> Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</li> <li>VI <input type="checkbox"/> Certain documents cited</li> <li>VII <input type="checkbox"/> Certain defects in the international application</li> <li>VIII <input type="checkbox"/> Certain observations on the international application</li> </ul> |

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| Date of submission of the demand<br>10.02.2004   | Date of completion of this report<br>13.07.2004                          |
| Name and mailing address of the international preliminary examining authority:<br><br>European Patent Office<br>D-80298 Munich<br>Tel. +49 89 2399 - 0 Tx: 523656 epmu d<br>Fax: +49 89 2399 - 4465 | Authorized Officer<br><br>Okunowski, J<br>Telephone No. +49 89 2399-8975 |



INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT

International application No. PCT/IT 03/00234

**I. Basis of the report**

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

**Description, Pages**

1-9 as originally filed

**Claims, Numbers**

1-17 filed with the demand

**Drawings, Sheets**

1/4-4/4 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: English, which is:

- the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
- the language of publication of the international application (under Rule 48.3(b)).
- the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- contained in the international application in written form.
- filed together with the international application in computer readable form.
- furnished subsequently to this Authority in written form.
- furnished subsequently to this Authority in computer readable form.
- The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- the description, pages:
- the claims, Nos.: 18-26
- the drawings, sheets:

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EXAMINATION REPORT**

International application No. PCT/IT 03/00234

5.  This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).  
*(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)*

6. Additional observations, if necessary:

**V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

1. Statement

|                               |             |      |
|-------------------------------|-------------|------|
| Novelty (N)                   | Yes: Claims | 1-17 |
|                               | No: Claims  |      |
| Inventive step (IS)           | Yes: Claims | 1-17 |
|                               | No: Claims  |      |
| Industrial applicability (IA) | Yes: Claims | 1-17 |
|                               | No: Claims  |      |

2. Citations and explanations

**see separate sheet**

INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT - SEPARATE SHEET

International application No. PCT/IT 03/00234

**Item V**

- 1 The description has not been adapted to the present claims. As a consequence, there are inconsistencies between the claims and the description, which detract from the clarity of the claims.
- 2 Having respect to what is considered to be the closest prior art, column 6, lines 31-48 and Example 13 of US-A-4 100 725, the subject-matter of the present claims is distinguished in that the abrasion is applied in the portion of the yarn path where the yarn is stretched, c.q. in that the abrasion device is located in that part of the yarn producing device where the yarn is stretched. There is no suggestion that this combination of stretching and abrasion could offer a solution to the problem of yarn contraction after abrasive treatment. The subject-matter of the present claims is therefore novel, and involves an inventive step.

Amended Claims under Art. 34 PCT

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CLAIMS

1. Method for treating a textile yarn, wherein said yarn is subject to mechanical abrasive surface processing, characterized in that said yarn is subjected to stretching and said mechanical surface processing is carried out in an area of the yarn subjected to stretching.
2. Method according to Claim 1, comprising the following steps:
  - forming a synthetic yarn comprising a plurality of continuous strands or filaments;
  - subjecting said yarn to said stretching and to said mechanical abrasive surface processing to break at least one of said continuous strands or filaments and to form a plurality of discontinuous fibers projecting from the yarn.
3. Method according to Claim 2, characterized in that said synthetic yarn is an air-textured yarn.
4. Method according to one or more of the preceding claims, characterized by the following steps:
  - forming a composite synthetic yarn comprising: (a) a multi-strand thread with continuous strands or filaments forming a core; and (b) a multi-strand effect thread with continuous strands or filaments, joined by air texturing to said core;
  - subjecting said composite synthetic yarn to said stretching and to said mechanical abrasive surface processing which interrupts the continuity of at least some of the continuous strands or filaments forming the effect thread.
5. Method according to one or more of the preceding claims, characterized in that said yarn is subjected to a stretch in the range from 3% to 6%, and preferably from 4% to 5%.
6. Method according to one or more of the preceding claims, characterized in that said mechanical abrasive surface processing is carried out by means of a grinder rotating about an axis of rotation.
7. Method according to Claim 6, characterized in that said yarn is

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guided in such a way as to contact said grinder along a line which is inclined with respect to said axis of rotation of the grinder.

8. Method according to Claim 6 or 7, characterized in that said grinder has a conical shape.

5 9. Device for producing a yarn, comprising a path for said yarn, and at least one surface processing arranged along said path and carrying out a mechanical abrasive surface processing on said yarn, characterized in that it comprises stretching elements, which impart a stretch to said yarn along a portion of said path, said at least one mechanical processing element  
10 acting on the yarn along said portion of the path in which the yarn is subjected to stretching.

10. Device according to Claim 9, characterized by an air-texturing system located upstream of the mechanical processing element, said yarn  
15 being an air-textured yarn comprising at least one continuous strand or filament, whose continuity is interrupted by said mechanical processing element.

11. Device according to Claim 10, characterized in that said air-texturing system comprises at least one texturing nozzle, fed with at least two  
20 continuous yarns, each consisting of a plurality of continuous strands or filaments.

12. Device according to one or more of Claims 9 to 11, characterized in that it comprises two rollers positioned along said path of the yarn, around which turns of said yarn are wound, the peripheral  
25 velocities of said two rollers being different from each other in order to impart a stretch to said yarn, said mechanical processing element being positioned between said two rollers.

13. Device according to one or more of Claims 9 to 12, characterized in that said mechanical processing element is associated with a  
30 suction system for sucking out the residues generated by the abrasive processing.

14. Device according to one or more of Claims 9 to 13, characterized in that said mechanical processing element is a grinder rotating about an axis of rotation.

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15. Device according to Claim 14, characterized by two yarn guides located upstream and downstream of the grinder along the yarn path.

16. Device according to Claim 15, characterized in that said yarn guides are staggered with respect to each other to position the yarn in contact with said grinder along a line which is inclined with respect to the axis of rotation of the grinder.

17. Device according to Claim 14, 15 or 16, characterized in that said grinder is a conical grinder.